User's Manual

TERMINATOR DIGITAL AUTO FEEDBACK

ALTO®

www.altoproaudio.com

Version 1.0 April 2002

— **English** —

SAFETY INSTRUCTIONS

This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure-voltage that may be sufficient to constitute a risk of shock.

This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Read the manual.

CAUTION: To reduce the risk of electric shock, do not remove the cover(or back). No user serviceable parts inside; refer servicing to qualified personnel.

WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

ON: Denotes the appliances turn on.

OFF: Denotes the appliances turn off.

~ Alternating current / voltage (if the appliances use the symbol)

⎓ Direct current /voltage(if the appliances use the symbol)

DETAILED SAFETY INSTRUCTIONS:

All the safety and operation instructions should be read before the appliance is operated.

• RETAIN INSTRUCTIONS:

The safety and operating instructions should be retained for future reference.

• READ WARNINGS:

All warnings on the appliance and in the operating instructions should be adhered to.

• FOLLOW INSTRUCTIONS:

All operation and user instructions should be followed.

• WATER AND MOISTURE:

The appliance should not be used near water (e.g.near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool etc.)

The appliance shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the appliance.

• VENTILATION:

The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, soft rug, or similar surface that may block the ventilation openings: or placed in a built-in installation, such as bookcase or cabinet that may impede the flow of air through the ventilation openings.

The appliance should be placed on a solid surface with a minimum distance of 1m from the back of side, top plate to the wall.

If the appliance have openings, please do not block any ventilation openings.

• HEAT:

The appliance should be situated away from heat sources such as radiators, stoves, or other appliance (including amplifiers)that produce heat. No naked flame sources, such as lighted candles, should be placed on the appliances.

• POWER SOURCE:

The appliance should be connected to a power supply only of the type described in the operating instructions or as maked on the appliance.

Only for the appliance equipped with Voltage Selector, they should only be reset and re-equipped with a proper plug for alternative voltage by a qualified service technician. Do not attempt to alter this yourself.

• GROUNDING OR POLARIZATION:

Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

• POWER-CORD PROTECTION:

Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles and the point where they exit from the appliance.

• CLEANING:

Clean only with dry cloth.

• NON-USE PERIODS:

The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time or during lightning storms.

• SERVICING INSTRUCTIONS:

The appliance should be serviced by qualified service personnel when:

-The power supply cord or the plug has been damaged; or

-Objects have fallen, or liquid has been spilled into the appliance; or

-The appliance has been exposed to rain; or

-The appliance dose not appear to operate normally or exhibits a marked change in performance; or

-The appliance has been dropped, or the enclosure damaged.

Caution: These servicing instructions are for use by qualified service personnel only, To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

• SERVICING NOTE:

Disconnect power cord before servicing.

Replace critical components ⚠ only with factory parts or recommended equivalents.

For AC power supply units-Before returning repaired unit to user, the unit should be subject to insulation resistance test.

Preface

Dear Customer,

Thanks for choosing ▲LTO TERMINATOR and thanks for choosing the one of the results of ▲LTO AUDIO TEAM job and researches.

For our ▲LTO AUDIO TEAM, music and sound are more than a job ...are first of all passion and let us say...our obsession!

We have been designing professional audio products for a long time in cooperation with some of the major brands in the world in the audio field.

The Alto line presents unparalleled analogue and digital products made by Musicians for Musicians in our R&D Centers in Italy, Netherlands, United Kingdom and Taiwan. The core of our digital audio products is a sophisticated DSP (Digital sound processor) and a large range of state of the art algorithms which have been developed by our Software Team for the last 7 years.

Because we are convinced you are the most important member of ▲LTO AUDIO TEAM and the one confirming the quality of our job, we'd like to share with you our work and our dreams, paying attention to your suggestions and your comments.

Following this idea we create our products and we will create the new ones! From our side, we guarantee you and we will guarantee you also in future the best quality, and the best fruits of our continuous researches and the best prices.

Our ▲LTO TERMINATOR is the result of many hours of listening and tests involving common people, area experts, musicians and technicians.

The result of this effort is the realization of a multi-mode and configurable DSP Audio Processor, devoted to preserve the cleanness of on-stage events from being disturbed by Feedback between loudspeakers and microphones.

Nothing else to add, but that we would like to thank all the people that made the ▲LTO TERMINATOR a reality available to our customers, and thank our designers and all the ▲LTO staff, there to make possible the realization of products containing our idea of music and sound and there to support you , our customers, in the best way, conscious that you are our best richness.

Thank you very much.
▲LTO AUDIO TEAM

TABLE OF CONTENTS

1. INTRODUCTION.....4

2. FEATURE LIST.....4

3. FRONT AND BACK PANELS DESCRIPTION.....4

3.1 Control panel (Front Panel)

a. Analog levels

b. LED and Illuminated Power Switch

3.2 Analog Connections (Back Panel)

a. Analog Inputs/Outputs

b. MIDI Connectors

c. Power Connector

4. INSTALLATION & CONNECTION.....5

4.1 Audio Connections and Power Up

a. Audio Connections

b. Power Up Setting

4.2 Analog

a. Levels Setting

4.3 Installation

a. Standard Use

b. Application Examples

- Line Instrument
- Mixer

5. OPERATIONAL OVERVIEW.....7

6. GET IT STARTED.....8

7. PROCESSES FUNCTIONAL DATA.....9

8. TERMINATOR BLOCK SCHEME.....9

8.1 System Menu

8.2 Utility Menu

8.3 MIDI

9. TECHNICAL SPECIFICATIONS.....11

10. WARRANTY.....12

1. INTRODUCTION

Purchasing ▲LTO TERMINATOR, you purchased a very powerful unit, easy to use and contained in a very efficient signal-rack unit package.

▲LTO TERMINATOR is a multi-mode and configurable DSP Audio Processor, devoted to preserve the cleanness of on-stage events from being disturbed by Feedback between loudspeakers and microphones.

With ▲LTO TERMINATOR we offer to the performer a new freedom of movements and an increased monitor level, and let them concentrate on music, instead of having to do with Feedback concerns.

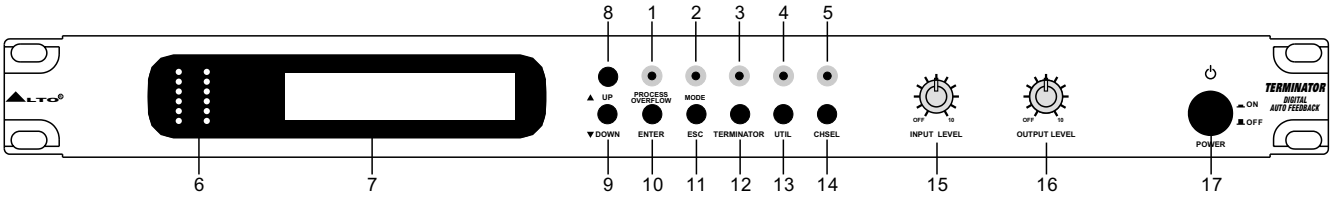
All the algorithms used in this device are completely original and innovative, and take care of the suggestions of professional users worldwide. The whole design has been developed, modified and optimized thanks to the experience of ▲LTO AUDIO TEAM researchers.

2. FEATURE LIST :

- Robust and Compact design
- 24/32 bits Digital Audio Processor
- MPU Control
- Variable Input / Output Gain
- Illuminated Power Switch
- Digital Saturation LED
- Easy to Operate Front Panel Controls
- SMT Design for Greater Reliability
- Optimized signal path to Provide Superior Sound
- Manufactured Under ISO9001 Quality system

3. FRONT AND BACK PANELS DESCRIPTION

3.1 Control panel (Front Panel):



1. Digital Overflow
2. Terminator searching LED
3. Enable/disable Terminator LED
4. Utility LED
5. Enable/disable channel select led
6. Dual Function Vu-Meters (filter manual inserted LEDs / vu-meter if bypass system).
7. LCD alphanumeric display 20×2
8. Up key
9. Down key
10. Enter key
11. Esc key
12. Terminator key
13. Utility key
14. Channel select key
15. Analog Input volume
16. Analog Output gain
17. Power ON/OFF Switch

a. Analog levels

- Analog Input Level Potentiometer (15) : The input level control sets the main input gain, before the signal reaches the input bus. It controls both the INPUT 1 and INPUT 2 levels simultaneously.

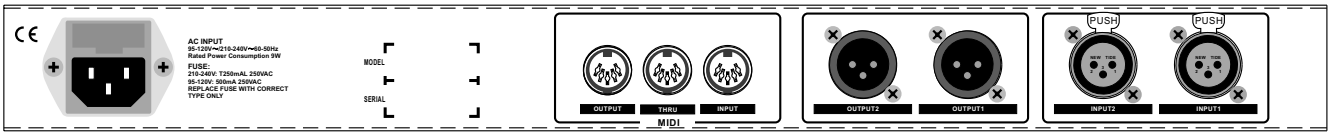
- Analog Output Level Potentiometer (16) : The output level control set the level going to the amplifier or mixer from this apparatus.

b. LED and Illuminated Power Switch

- Digital Saturation LED (1) : Displays the signal level coming into the input during normal operation, if the signal level is too high, this LED will turn red and you will begin to hear the signal distortion.

- Power On/Off Switch (17) : Turns the apparatus on and off.

3.2. Analog connections (Back Panel):



a. Analog Inputs/Outputs

- Inputs : These are XLR balanced connectors which connect to sources such as the effects sends of mixing console. They may be used with nominal input levels from consumer to professional audio.

- Outputs : These are XLR balanced connectors which connect to devices such as the effects returns on a mixing console or power amplifier inputs.

b. MIDI Connectors

- MIDI In : DIN connector for the MIDI input to the TERMINATOR.

- MIDI Thru : DIN connector for the MIDI thru.

- MIDI Out : DIN connector for the MIDI output from the TERMINATOR.

c. Power Connector

- Power Connector : This is a plug for connecting the power supply to the TERMINATOR .

4. INSTALLATION & CONNECTION :

4.1. Audio Connections and Power Up

a. Audio Connections

The connections between the TERMINATOR and the other audio devices have to be made using high quality cables so to prevent bad performances of the TERMINATOR itself. So it should be good to use low-capacitance shielded cables with a flexible internal conductor. Connect the cables to the TERMINATOR properly by observing the following precautions:

- Do not bundle audio cables with AC power cords.
- Avoid place audio cables and TERMINATOR, near sources of electromagnetic interference such as transformers, monitors, computers, etc.
- Always unplug cables by firmly grasping the body of the plug and pulling directly outward.
- Do not place cables where they can be stepped on
- Avoid twisting the cable or having it make sharp, right angle turns.

b. Power Up Setting

After making your connections, turn on the system's power using this procedure:

Before turning on the TERMINATOR's power, check if:

- All connections have been made correctly
- The volume controls of the amplifier or mixer are turned down

Insert the Power plug into the POWER input on the rear panel of the TERMINATOR and plug the power cable into an AC outlet.

Turn on the power of the TERMINATOR, pushing the ON/OFF button on the front panel.

Turn on the power of the amplifier/mixer, and adjust the volume.

4.2. Analog

a. Levels Setting

Proper setting of the input and output levels is crucial in order to achieve the maximum signal-to-noise ratio. It is possible to say that it is usually best to set both input and output level controls at 3/4 or 75% of full. This will decrease the possibility of overload distortion and keep the amount of background noise to a minimum.

If the VU-Meters or the Digital Saturation LED on the TERMINATOR begin to clip (turn red), turn down the Input level or decrease the volume of the source (instrument, mixer send, etc.). If the output level is causing the mixer or amp to distort, turn the Output Level down.

4.3. Installation

a. Standard Use

The TERMINATOR may be placed almost anywhere: on a table, on top of an amp, next to a mixing console.

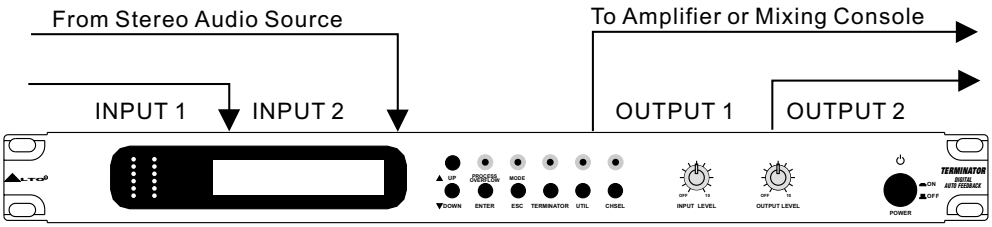
If it will be on furniture, check the rubber feet provided to the bottom of the unit. Make sure to place the TERMINATOR away from other audio equipment that may induce fields, and away from the signal wiring. It is possible that TERMINATOR may pick up noise fields generated by other equipment such as large power amplifiers; in this case, move the TERMINATOR until the noise goes away.

b. Application Examples

- line instrument

When connecting audio cables and/or turning power on and off, make sure that all devices in your system have their volume controls turned down.

TERMINATOR has two XLR balanced inputs and two XLR balanced outputs allowing the TERMINATOR to be used in a classical Stereo in and Stereo Out connection.
Connect two audio cables to the INPUT 1 and INPUT 2 of the TERMINATOR from a double source, and two other audio cables from the OUTPUT 1 and OUTPUT 2 of the TERMINATOR to a double channel amplification system or two mixer inputs.

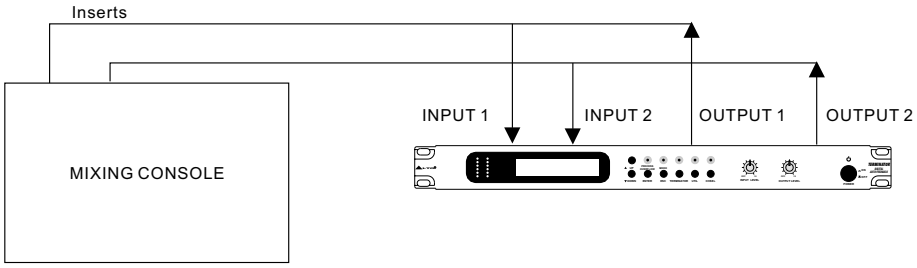


- mixer

Interfacing to a Mixing Console

The TERMINATOR can accept stereo sends at all system levels. The input circuitry of the TERMINATOR can easily accept professional levels while having enough input and output gain to interface with the low signal levels of home recording systems.
The TERMINATOR may be connected to a mixing console connecting the unit directly to the channel insert socket of a single channel that is to be processed. Another way of interfacing the TERMINATOR to a mixer or recording console would be in-line between the output of your mixing console and the input of a tape deck or power amplifier. This last setup would be used only if you wanted to process the entire mix.

Using Inserts



In the above figure it is described the situation in which you want to apply the TERMINATOR to a couple of channels arriving to a mixing console, in order to apply the desired dynamic process to single instruments' signals; in this case you will have to use a mixer which features individual channel inserts. Insert jacks on the back of a mixer provide a way of 'inserting' external processing equipment into the signal path.
The insert occurs after the input amplifier, and before the channel fader; essentially it is the same as connecting the source (instrument or mic) into the TERMINATOR before the mixer's channel input. Usually, insert connections require a special, stereo-splitting Y-cord to be connected, known as TRS connector.
This connector has a stereo jack which plugs into mixer's channel insert socket, and a couple of jacks (input and output) which will plug into TERMINATOR via suitable jack-XLR adapters. Fitting this kind of cabling will virtually insert into one mixer's channel the compression processing. Take good care in adjusting TERMINATOR input and output levels, in order to satisfy the dynamics needs of both the processed channels.
Do not use for the TERMINATOR the effects send/return connections found on most mixers for effect modules, as they could lead to heavy frequency response alterations.

Improper level setting when using a dynamic processor is the most common cause of noise and distortion problems

5. OPERATIONAL OVERVIEW

Switching ON the TERMINATOR, after an initialization procedure, the last stored preset will be loaded. Changes not saved **will be lost**.

To load exactly the last preset configuration running before shutdown of the TERMINATOR, it's necessary to store these modifications using the STORE Function available into the UTILITY Menu. After the initialization procedure, on the LCD it will appear the first field of the UTILITY Menu and the UTILITY LED Button will turn ON.

Utility Button(13): To access the UTILITY Menu it's necessary to push the UTILITY Button (13).

If the unit is already working on Utility Menu (Utility LED (4) = ON) each further use of the button will have no effect.

Using the Utility Menu is possible to access the following functions :

Load Preset: this function allows the loading of one of the 65 available presets, where the first preset is factory preset, and the presets from 2 to 65 are the User's configurable presets and all not initialized (Empty) when the unit is shipped.

To Load a preset:

- Select "Load Preset" using **up/down** buttons
- Press **enter** button to access further sub menu
- Select the chosen preset using **up/down** buttons
- Press **enter** to load the preset or press **esc** button if you decide to not load anymore the preset

Once terminated the sequence above, on the display will appear the name of the selected preset and the system will go back to the starting menu.

Store Preset: this function allows the storing on one of the 64 available memory locations the modified (using the Editing Menu) user's presets, starting from the available factory preset.

To Store a preset:

- Select "Store Preset" using **up/down** buttons
- Press **enter** button to access the further sub menu
- Select the memory location (Empty or already occupied from a previous user's preset) where to store the new user's preset using **up/down** buttons
- If you want to give up, press **esc** to go back to the main menu without storing the new preset otherwise press **enter** to store the new preset. The user can choose the identification name for the new preset using 6 characters max. The blinking character show the character will be modified using the **up/down** buttons. When chosen the character, press enter to confirm the character itself and pass to the next one. Pressing **esc** before the 6th character, the old name will be maintained as name of the new preset. Pressing **enter** on as confirmation of the 6th character, the new preset will be stored with the new name. There is no possibility to correct a confirmed character, if necessary to change again the name, repeat the storing process from the beginning.

Once terminated the sequence above, on the display will appear the name of the new stored preset and the system will go back to the starting menu.

MIDI Setup: the MIDI SETUP utility allows the user to set up the TERMINATOR MIDI configuration. The configurable MIDI parameters are:

- **MIDI Channel**: allows to define the MIDI CHANNEL to associate to the TERMINATOR when connected to remote MIDI devices. When MIDI CHANNEL is set to OFF, the TERMINATOR will ignore whatever MIDI command coming from the external MIDI devices.
- **MIDI Output:** When this function is set as ON is possible to ECHO on the MIDI output of the TERMINATOR all the incoming MIDI messages.

Terminator Setup: This utility is designed to set the operating modes of the unit:

- **Terminator mode** that allows the user to select between the use of feedback suppression filters with constant or variable Q. When variable Q is selected, the system, in the case of persistent feedbacks, uses the previously set filters, enlarging their band, in order to suppress feedbacks which change moderately in frequency.
- **Search Mode** selects the channel to be processed, in order to optimize speed of the DSP engine.
- **Gain Mode** allows the user to set the automatic feedback suppression filters timeout; if **Gain Mode =**

Gain Var, in absence of feedbacks the suppression filters are slowly excluded from the signal path, unless a feedback occur again. If **Gain Mode = Gain Cst**, suppression filters are left in place, until they are required by a feedback at another frequency.

Threshold Setup: this utility allows to set the threshold value (0,..,99) beyond which a monochromatic (sinusoidal) signal is treated as a feedback and intercepted.

Filter Edit: accessing this utility it is possible to set the single filter's operational mode:

1.Filter Mode: In MANUAL mode the user can assign a filter that won't be changed by the machine (advisable for fixed mics), while in AUTOMATIC mode the filter will be available to the DSP engine's needs (advisable for hand mics).

2.Frequency Adjust: selects the filter central frequency from 20Hz to 20 KHz with steps of 10/27 Oct (27 steps).

3.Frequency Fine: selects the filter central frequency from 20Hz to 20 KHz with steps of 1/729 Oct.

4.Band Width: selects the filter band with from 1/70 Oct 20Hz to 1/3 Oct in 6 steps.

5.Gain: selects the filter gain from 0dB up to -45dB with steps of 3dB (16 steps)

Filter Reset: It resets **all the active filters** either manual or automatic, of the selected channel.

Filter View: This function shows the user all the characteristics of the filters' settings: mode, frequency, band width, attenuation.

Bypass System: This utility allows the accurate setting of the analog signal level; the TERMINATOR stops processing the signal and on the VU-meters it is shown the level of the input signal. To exit, push Enter or Esc.

SelCh Key (14)**:** This key selects the channel on which to edit parameters. When (ChSel LED (4)) is off, it is possible to select the channel, when this LED is on, the SelCh key is disabled.

Terminator Key (12)**:** This key starts the feedback search engine. This is confirmed by the LED (Terminator LED (2)) on and by the display, on which there will be on a double row the list of the inserted suppression filters. Each filter will be indicated by a symbol:
The symbol 'M' indicates the filter is Manual
The symbol '*' indicates the filter is Automatic but not yet active
The symbol '0' indicates the filter is Automatic and has parameters:1/70 Oct / -45dB
The symbol '1' indicates the filter is Automatic and has parameters: 1/50 Oct / -45dB
The symbol '2' indicates the filter is Automatic and has parameters: 1/30 Oct / -45dB
The symbol '3' indicates the filter is Automatic and has parameters: 1/7 Oct / -45dB
The symbol '4' indicates the filter is Automatic and has parameters: 1/5 Oct / -45dB
The symbol '5' indicates the filter is Automatic and has parameters: 1/3 Oct / -45dB

The Terminator Search LED (2) is blinking when the feedback control engine is running; the blinking speed varies according to the number of found feedbacks.

The Manual Filters LEDs (6) show (LED = ON) the number of manual filters inserted by the user . during Bypass operation, they act as VU-meters.

Output Attenuation This control allows the digital output volume setting. This parameter is a "system parameter" and its modification acts on all the presets.

Up/Down Button (8/9): these buttons are used to move inside the menus and to modify the parameter's value

Enter/Esc Button (10/11): these buttons are used to access or to leave the several menus, or to confirm or not the parameter's value.

6. GET IT STARTED

1. Setup your system with correct microphone levels.
2. From Utility Menu access "Bypass System" function.
3. Using the provided VU-meters adjust the input level of the TERMINATOR to match your system dynamics.
4. Use the Output level control to feed correct levels to Mixer or Power amp.
5. Position the microphones on stage, and do a sound check, trying to stimulate feedbacks (ie. loud singing in the vicinity of a loudspeaker system). Access the "Threshold Setup" function from the Utility Menu and set the threshold value at the highest possible level still allowing a fast (about 1 sec) elimination of feedback bursts.

7. PROCESSES FUNCTIONAL DATA

Terminator Setup:

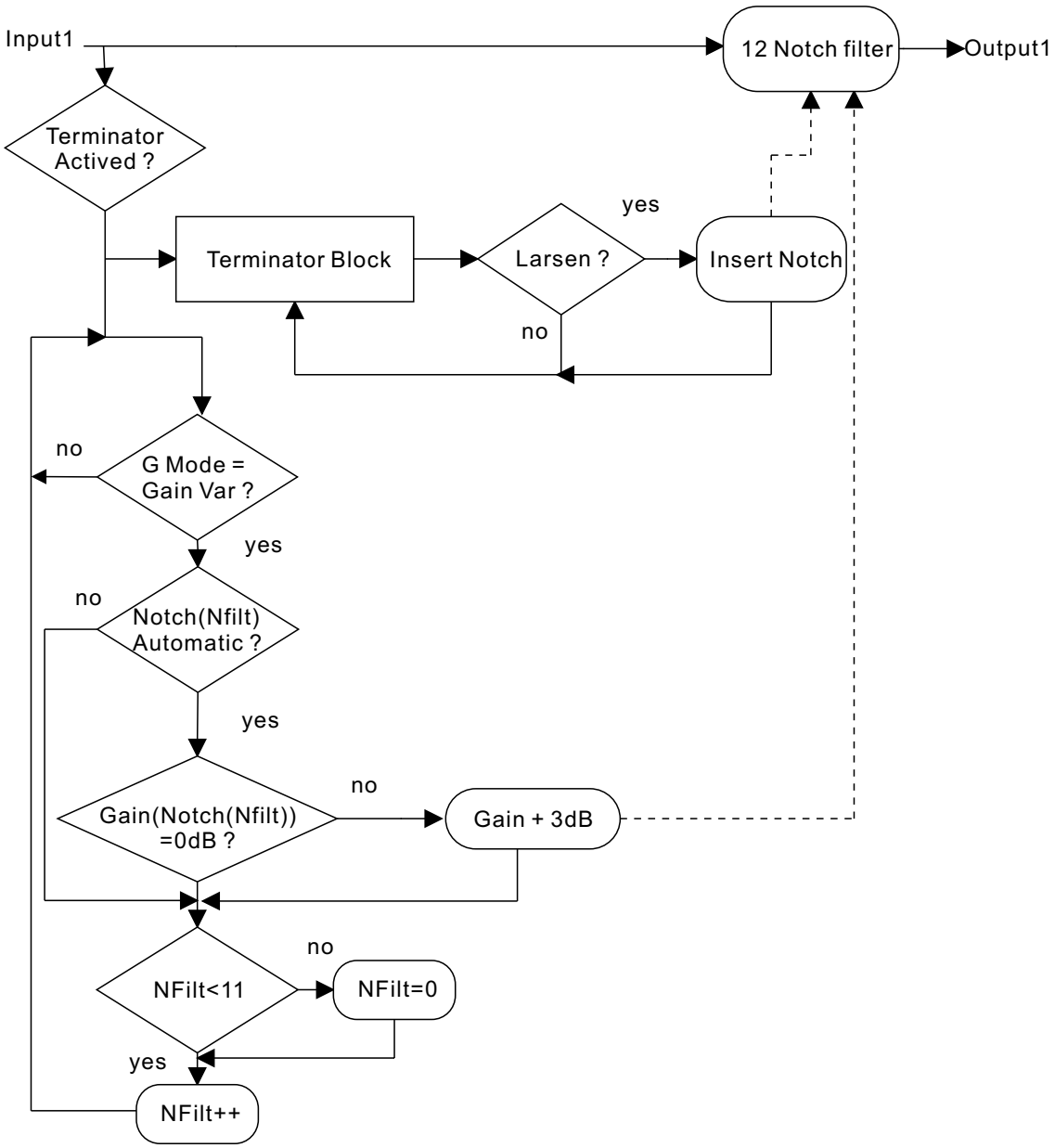
Selectable Manual Filters Number: 0-12 notch filters.
Threshold: min-max in 100 steps.
Antilarsen Mode: Only Ch1, Only Ch2, Ch1 & Ch2.
Reset All Filters.
Automatic Larsen Search with constant Q notches.
Automatic Larsen Search with variable Q notches.
Automatic notch filter Erase.
Manual user-selectable filters.

Manual Filter Edit:

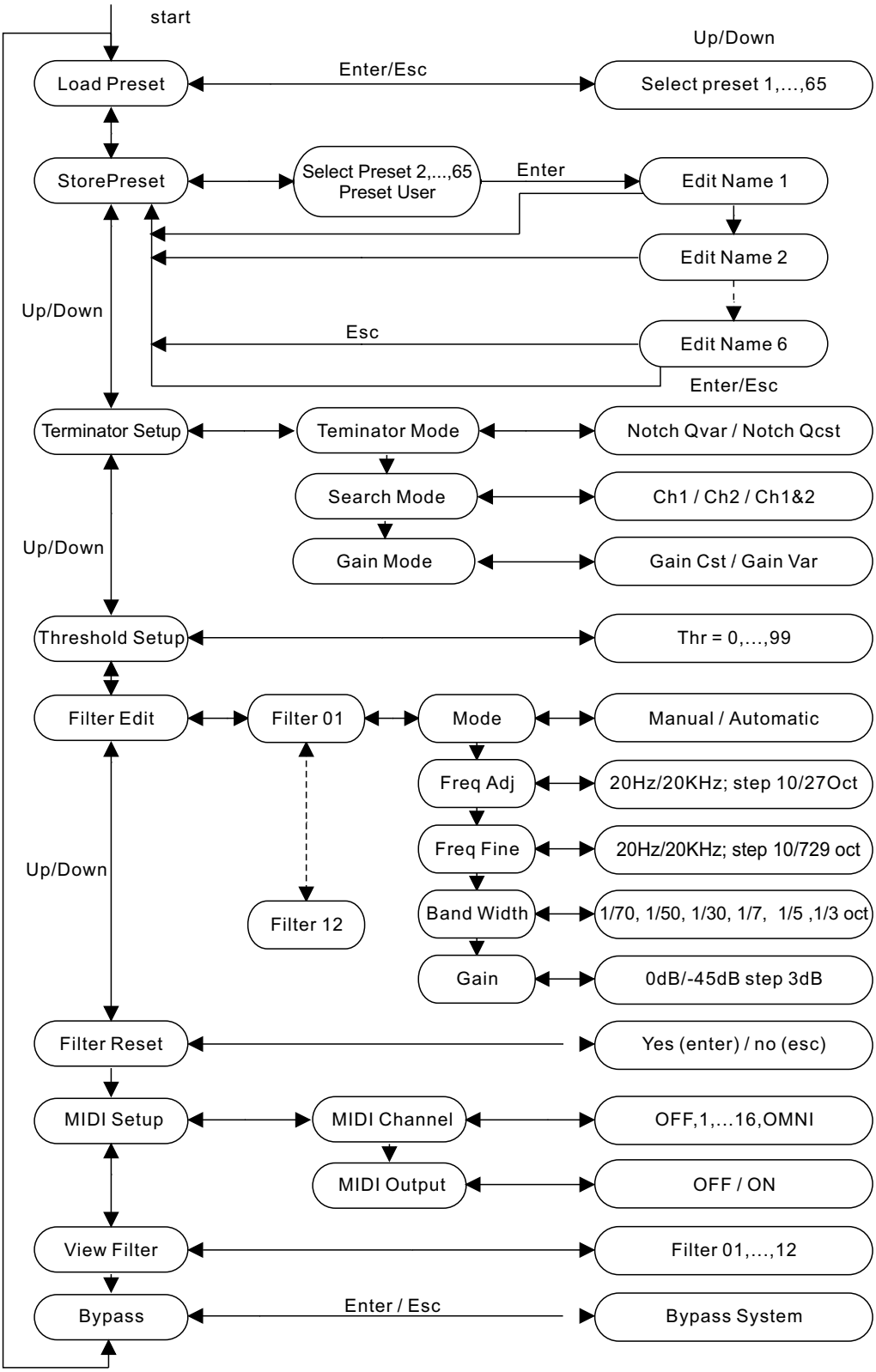
Frequency Adjust: 20 Hz/20kHz step 1 oct.
Fine Frequency Adjust: 20 Hz/20kHz step 1/60 oct.
Filter Attenuation: 0/-45 dB step 3 dB.

8. TERMINATOR BLOCK SCHEME :

8.1 System Menu



8.2 Utility Menu



8.3 MIDI

a. Change Preset

MIDI 1st byte PROGRAM CHANGE

MIDI 2nd byte 0,...,64

MIDI 2nd byte	Preset	Legend
0	Preset 1	Factory Preset
1,...,64	Preset 2,...,65	User Preset

b. Change Channel

MIDI 1st byte CONTROL CHANGE

Parameter	MIDI 2nd byte	MIDI 3rd byte	Legend
Select Channel	14	0,1	Ch1, Ch2

9. TECHNICAL SPECIFICATIONS

Analog Input section

Inputs:	Analog variable gain, 2 XLR-F electronically balanced
Input Impedance:	44 kOhms
Max. input Level:	15 dBu (4.4V RMS)
Sensitivity:	-22 dBu (63mV RMS)

Analog Output section

Outputs:	Analog variable gain, 2 XLR-M electronically balanced
Output Impedance	<150 Ohms
Max. output level:	17 dBu on 600 Ohms (5.5V RMS)

Digital / Analog Interface

Amplitude Response:	20 Hz - 20 kHz + 0.1 / - 1 dB
Signal to Noise Ratio	90 dB("A"-20Hz/ 20KHz)
THD+N	0.03 % @ 1kHz -6 dB (VU-meter level)
Group Delay	700 μs
Sampling Frequency	46.875 kHz
Conversion	1 bit Sigma-Delta

Digital

Processor Speed:	12 MIPs
DSP Resolution:	24×32 bits
Control:	Microprocessor

MIDI Section

Connections:	Input/Output/Thru
Sockets	5-poles DIN (female)
Mode	Photocoupled

Power Supply

Connector type:	3-pole IEC, grounded
Type:	Servo controlled, stabilized
Mains supply:	115V or 230V 50/60 Hz
Power Rating:	9 W

User Interface

Alphanumeric LCD Display:	2×20 characters
Keyboard:	7 user keys / 5 LEDs
VU meter:	2× 6 LEDs*(double function)*

Physical

Size:	Standard 19'' rack mounting
Dimensions (W/H/D):	483mm×44mm×232.5mm (19.32''×1.76''×9.3'')
Net weight:	3.8kg

10. WARRANTY

§ 1 WARRANTY CARD

To be protected by this warranty, the buyer must complete and return the enclosed warranty card (signed /stamped by retail dealer) within 14 days of the date of purchase to ▲LTO. Failure to return the card in due time (date as per postmark) will void any extended warranty claims.

§ 2 WARRANTY CLAIMS

1. ▲LTO warrants the mechanical and electronic components of this product to be free of defects in material and workmanship for a period of one (1) year from the original date of purchase, in accordance with the warranty regulations described below. If any defects occur within the specified warranty period that are not caused by normal wear or inappropriate use, ▲LTO shall, at its sole discretion, either repair or replace the product.
2. Warranty claims other than those indicated above are expressly excluded.

§ 3 RETURN NOTICE

1. To obtain warranty service, the product must be returned in its original shipping carton. A description of the problem will be appreciated.
2. Shipments without freight prepaid will not be accepted.

§ 4 WARRANTY REGULATIONS

1. Warranty services will be furnished only if the product is accompanied by an original retail dealer's invoice. Any product deemed eligible for repair or replacement by ▲LTO under the terms of this warranty will be repaired or replaced within 30 days of receipt of the product at ▲LTO.
2. If the product needs to be modified or adapted in order to comply with applicable technical or safety standards on a national or local level, in any country which is not the country for which the product was originally developed and manufactured, this modification/adaptation shall not be considered a defect in materials or workmanship. The warranty does not cover any such modification/adaptation, irrespective of whether it was carried out properly or not. Under the terms of this warranty, ▲LTO shall not be held responsible for any cost resulting from such a modification /adaptation.
3. Free inspections, maintenance/repair work and replacement of parts are expressly excluded from this warranty, in particular if caused by inappropriate use. Likewise, the warranty does not cover defects of expendable parts caused by normal wear of the product.
   Expendable parts are typically faders, potentiometers, switches and similar components.
4. Damages/defects caused by the following conditions are not covered by this warranty:
   misuse, neglect or failure to operate the unit in compliance with the instructions given in the user or service manuals.
   Connection or operation of the unit in any way that does not comply with the technical or safety regulations applicable in the country where the product is used.
   Damages/defects that are caused by force majeure or by any other condition beyond the control of ▲LTO.
5. Any repair carried out by unauthorized personnel will void the warranty.
6. Products which do not meet the terms of this warranty will be repaired exclusively at the buyer's expense. ▲LTO will inform the buyer of any such circumstance.
   If the buyer fails to submit a written repair order within 4 weeks after notification, ▲LTO will return the unit C.O.D. With a separate invoice for freight and packing.
   Such cost will also be invoiced separately when the buyer has sent in a written repair order.

§ 5 WARRANTY TRANSFERABILITY

This warranty is extended exclusively to the original buyer (customer of retail dealer) and is not transferable to anyone who may subsequently purchase this product. No other person (retail dealer, etc.) shall be entitled to give any warranty promise on behalf of ▲LTO.

§ 6 CLAIM FOR DAMAGES

Failure of ▲LTO to provide proper warranty service shall not entitle the buyer to claim (consequential) damages. In no event shall the liability of ▲LTO exceed the invoiced value of the product.

§ 7 OTHER WARRANTY RIGHTS

This warranty does not exclude or limit the buyer's statutory rights provided by national law, in particular, any such rights against the seller that arise from a legally effective purchase contract.